A SYSTEM AND METHOD FOR STRATEGIC
POWER SUPPLY SEQUENCING IN A
COMPUTER SYSTEM

Inventors: Clint H. O'Connor et al.

Attorney Docket No.: 016295.0690 (DC-03090)

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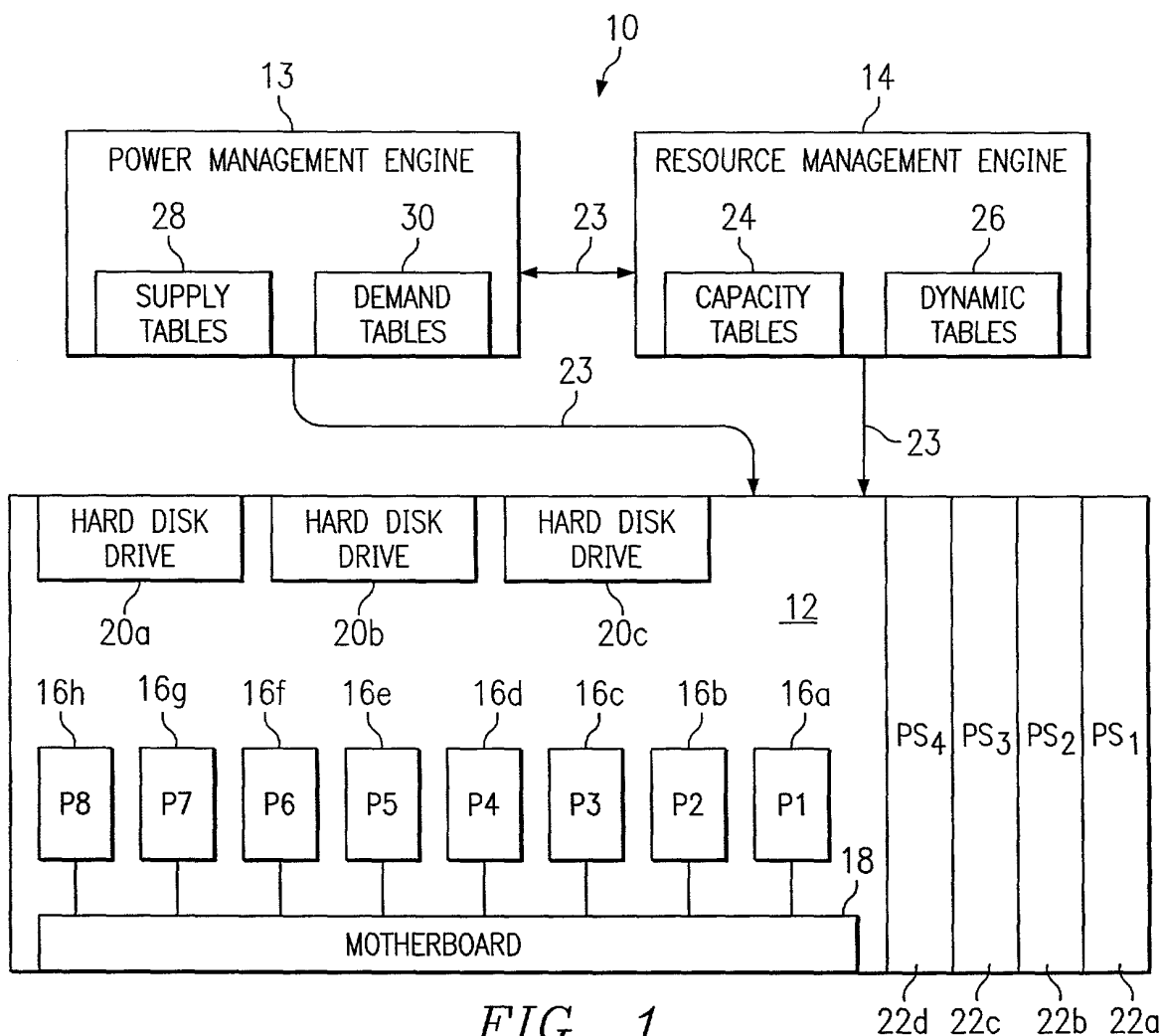
FIG. 1

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FIG. 2a

POWER SUPPLY TABLE — 34

	PROCESSORS SERVED	INRUSH CURRENT REQ'T (I_r) (A)	STEADY STATE CURRENT REQ'T (I_s) (A)	RESPONSE TIME (T_r) (SEC)	PEAK EFFICIENCY CURRENT (A)
PS$_1$	P1, P2, P3, P4	18.0	8.0	2.5	6.0
PS$_2$	P1, P2, P3, P4	18.0	8.0	2.5	6.0
PS$_3$	P1, P2, P3, P4	18.0	8.0	2.5	6.0
PS$_4$	P1, P2, P3, P4	18.0	8.0	2.5	6.0
	38	40	42	44	46

22a, 22b, 22c, 22d

FIG. 2b

PROCESSOR (SUBSYSTEM) DEMAND TABLE — 36

	POWER SUPPLIES	INRUSH CURRENT REQ'T (I_r) (A)	STEADY STATE CURRENT REQ'T (I_s) (A)
P1	PS$_1$, PS$_2$, PS$_3$, PS$_4$	12.0	5.0
P2	PS$_1$, PS$_2$, PS$_3$, PS$_4$	12.0	5.0
P3	PS$_1$, PS$_2$, PS$_3$, PS$_4$	12.0	5.0
P4	PS$_1$, PS$_2$, PS$_3$, PS$_4$	12.0	5.0
	48	50	52

16a, 16b, 16c, 16d

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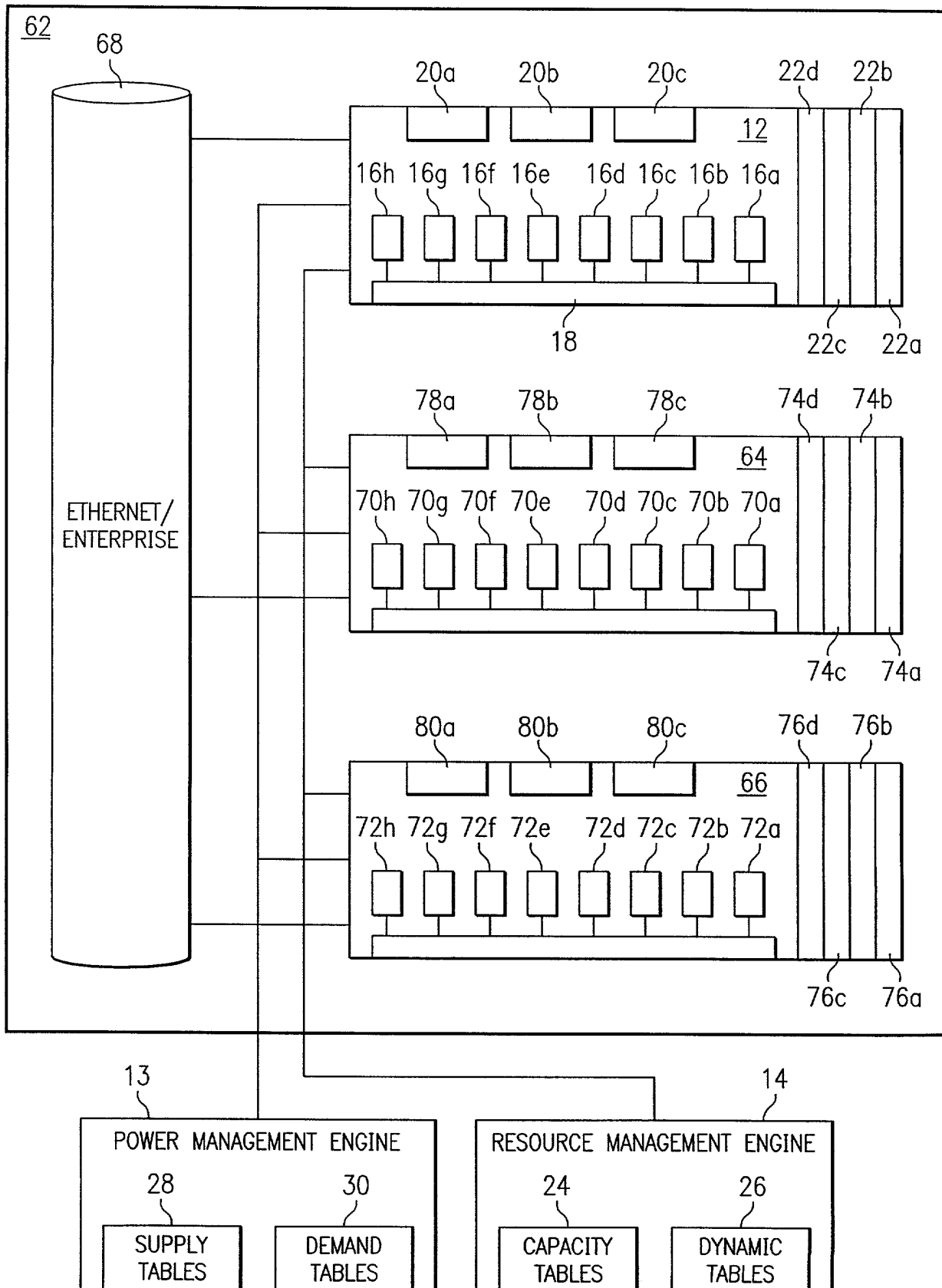
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FIG. 3

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FIG. 4

90 — START
(NEXT DECISION PERIOD)

92 — GET CURRENT DEMAND

94 — CONSULT CAPACITY TABLES TO DECIDE
ON PROCESSING RESOURCE CHANGE

96 — PROCESSING RESOURCE CHANGE? — NO

YES

100 — SEND PROCESSING RESOURCE
DECISION TO SERVER UNIT

102 — PROCESSING RESOURCE UP/DOWN? — DOWN

UP

UP
104 — CONSULT CAPACITY TABLES
ON POWER SUPPLY
CAPACITY VS. EFFICIENCY

106 — COMPARE TO NEEDED DEMAND,
REDUNDANCY REQUIREMENT FOR
NEW PROCESSING RESOURCE

108 — BRING UP NEW SUPPLY OR
ROTATE POWER SUPPLIES AS
NEEDED (SEE FIGURE 5)

110 — BRING UP NEW PROCESSING
RESOURCE, INTEGRATE INTO OS

DOWN
114 — REMOVE PROCESSING RESOURCE
FROM ACTIVE PARTICIPATION IN OS

116 — COMPLETE PROCESSING RESOURCE
POWER DOWN SEQUENCE (MAY BE
TO A LOWER POWER STATE RATHER
THAN COMPLETELY OFF)

118 — CONSULT TABLES ON POWER
SUPPLY CAPACITY VS. EFFICIENCY

120 — COMPARE TO REDUCED DEMAND,
REDUNDANCY REQUIREMENT FOR
REMAINING PROCESSING RESOURCES

122 — TURN OFF OR ROTATE POWER
SUPPLIES AS NEEDED

112 — SEND CHANGE COMPLETION
TO DECISION MAKER

98 — END

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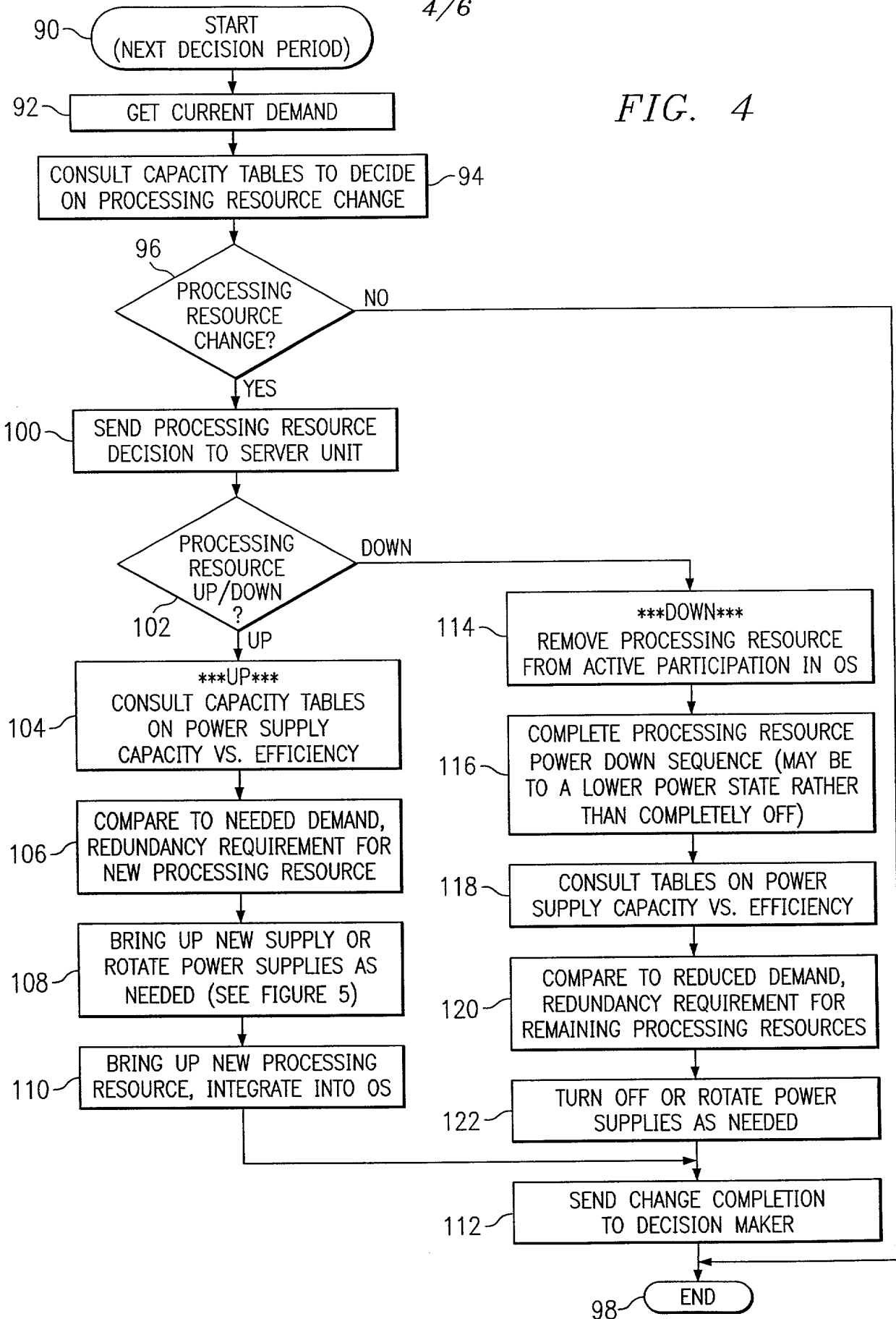
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FIG. 5

130 — POWER SUPPLY DECISION TREE (NEW PROCESSING RESOURCE)

132 — GET REQUIREMENT FOR NEW PROCESSING RESOURCE INRUSH, NORMAL POWER

134 — GET CURRENTLY ACTIVE POWER SUPPLY CAPACITIES (INRUSH, NORMAL) AND EFFICIENCY RATINGS

136 — GET AVAILABLE POOL OF POWER SUPPLIES CAPACITIES (SURGE, NORMAL) AND EFFICIENCIES

138 — GET REDUNDANCY POLICY FOR POWER SUPPLY

140 — COMPARE POLICY, NEW INRUSH DEMAND VS. CURRENT POWER SUPPLY

142 — CURRENT POWER SUPPLIES ADEQUATE AND EFFICIENT ?

146 — AVAILABLE POOL ADEQUATE?

150 — DISALLOW AND REPORT ERROR

148 — SELECT AND BRING UP ADDITIONAL POWER SUPPLIES TO READINESS

152 — SIGNAL AVAILABLE POWER TO OS OR DECISION MAKER

154 — COMPARE POLICY, NORMAL DEMAND REQUIREMENTS VS. CURRENT POWER SUPPLY

156 — BEST MATCH?

158 — SELECT AND BRING UP OR POWER DOWN OTHER POWER SUPPLIES (ROTATE ASYMMETRICAL SUPPLIES) TO ACHIEVE GOALS (AFTER PROCESSING RESOURCE STARTUP AND INRUSH DEMAND IS SATISFIED)

144 — PROCEED

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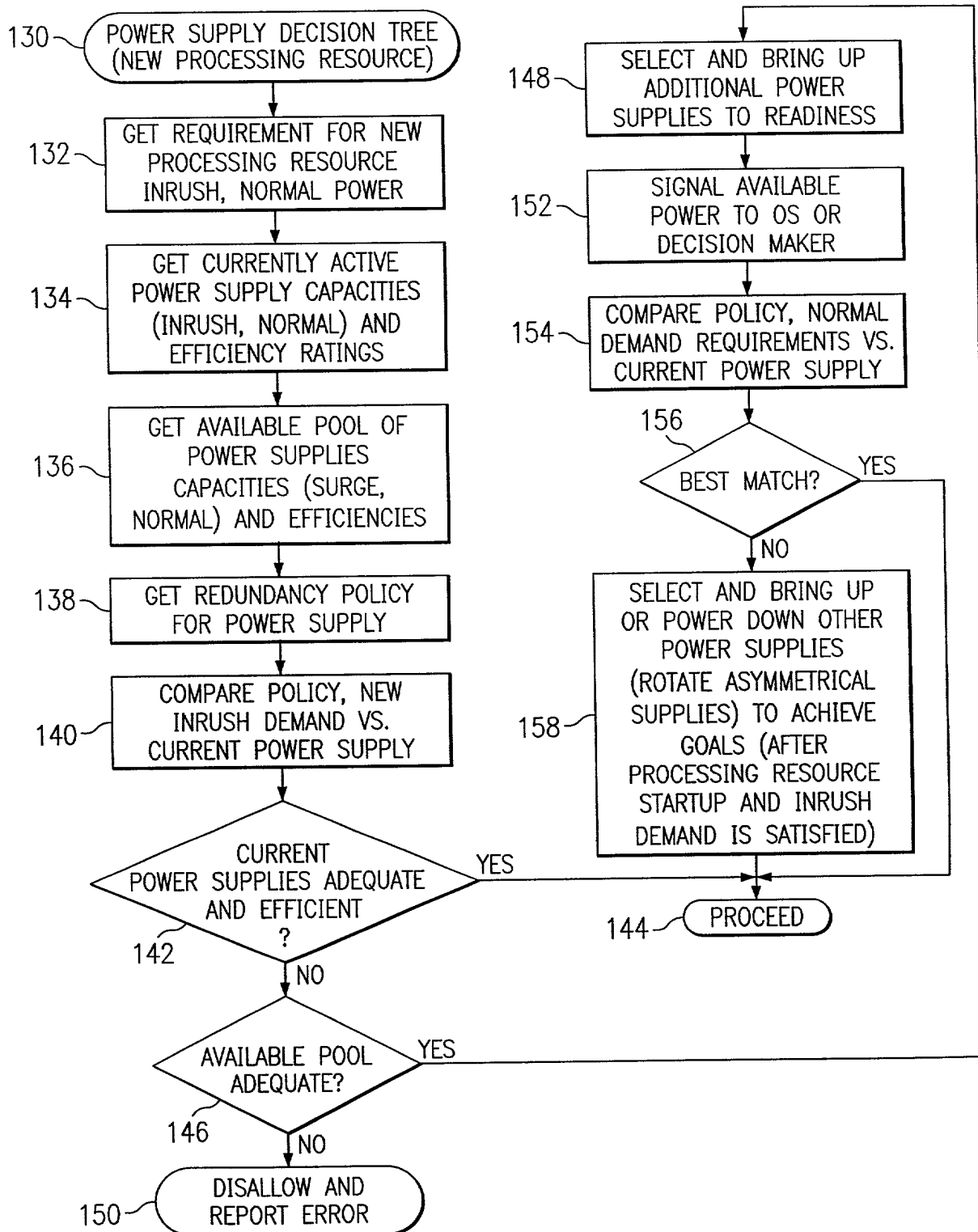Attorney Docket No.: 016295.0690 (DC-03090)

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FIG. 6

160 — POWER SUPPLY DECISION TREE
(REMOVE PROCESSING RESOURCE)

162 — GET REQUIREMENT FOR
REMAINING PROCESSING
RESOURCES—NORMAL POWER

164 — GET CURRENTLY ACTIVE
POWER SUPPLY
CAPACITIES (NORMAL) AND
EFFICIENCY RATINGS

166 — GET AVAILABLE POOL OF
POWER SUPPLIES
CAPACITIES (NORMAL)
AND EFFICIENCIES

168 — GET REDUNDANCY POLICY
FOR POWER SUPPLY

170 — COMPARE POLICY, NEW
REQUIREMENTS, CURRENT
POWER SUPPLY

172 — CURRENT
POWER SUPPLIES ADEQUATE
AND EFFICIENT
? — YES

NO

176 — SIGNAL REDUCTION IN
AVAILABLE POWER TO OS
OR DECISION MAKER

178 — SELECT AND BRING DOWN
POWER SUPPLIES TO
ACHIEVE GOALS

174 — PROCEED